

**REMARKS**

Claims 1-10 are pending in this application, of which claims 1, 5, 9 and 10 have been amended. No new claims have been added.

Claims 1, 5, 9 and 10 stand rejected under 35 USC §102(b) as anticipated by U.S. Patent 5,787,183 to Chu et al. (hereinafter "**Chu et al.**").

Applicants respectfully traverse this rejection.

**Chu et al.** discloses four directional microphones, two along each of mutually orthogonal axes, along with mixing circuitry and control circuitry. The microphones are held each directed out from a center point. The mixing circuitry combines the electrical signals from the microphones in varying proportions to form a composite signal, the composite signal including contributions from at least two of the microphones. The control circuitry analyzes the electrical signals to determine an angular orientation of the acoustic signal relative to the central point, and substantially continuously adjusts the proportions in response to the determined orientation and provides the adjusted proportions to the mixing circuitry.

This is in contrast to the present invention, in which only three unidirectional microphones are arranged on orthogonal axes, as shown in Fig. 13 of the instant application, and it is also in contrast to the present invention as shown in Fig. 14, in which one unidirectional microphone is arranged on a first axis and a bidirectional microphone is arranged on another axis orthogonal to the first axis.

Accordingly, claims 1, 5, 9 and 10 have been amended to clarify the specific number, type and arrangement of microphones shown in Figs. 13 and 14 of the instant application, and the 35 USC §102(b) rejection should be withdrawn.

Claims 1, 5, 9 and 10 stand rejected under 35 USC §102(b) as anticipated by U.S. Patent 5,675,655 to Hatae (hereinafter “**Hatae**”).

Applicants respectfully traverse this rejection.

**Hatae** discloses a sound apparatus comprising three unidirectional microphones 1, 2R 26 arranged on orthogonal axes. The signal processing applied to the outputs of the microphones produces a narrowed sound directivity when picking up sound while reducing the influence of ambient noise.

This is in contrast to the present invention, in which the signal processing calculates a directional sound signal to an arbitrary direction based on a unidirectional received sound signal to a positive direction on a first axis and a bidirectional received sound signal to positive and negative directions on the second axis, as recited in claims 1 and 5 of the instant application.

Thus, the 35 USC §102(b) rejection should be withdrawn.

Claims 1, 5, 9 and 10 stand rejected under 35 USC §102(b) as anticipated by U.S. Patent 6,173,059 to Huang et al. (hereinafter “**Huang et al.**”).

Applicants respectfully traverse this rejection.

**Huang et al.** discloses a telephone system includes two or more cardioid microphones held together and directed outwardly from a central point. Mixing circuitry and control circuitry

combines and analyzes signals from the microphones and selects the signal from one of the microphones or from one of one or more predetermined combinations of microphone signals in order to track a speaker as the speaker moves about a room or as various speakers situated about the room speak then fall silent. Visual indicators, in the form of light emitting diodes (LEDs) are evenly spaced around the perimeter of a circle concentric with the microphone array. Control circuitry selects the signal from the microphone or from one of the predetermined microphone combinations, based generally on the energy level of the signal, and employs the selected signal as the output signal. The control circuitry also operates to limit dithering between microphones and, by analyzing the beam selection pattern, may switch to a broader coverage pattern, rather than switching between two narrower beams that each covers one of the speakers.

All figures of Huang et al. fail to show orthogonal axes for placement of the microphones, as recited in claims 1, 5, 9 and 10 of the instant application.

Thus, the 35 USC §102(b) rejection should be withdrawn.

Claims 2-4 and 6-8 stand rejected under 35 USC §103(a) as unpatentable over Chu et al. or Huang et al. in view of U.S. Patent 6,469,732 to Chang et al. (hereinafter "Chang et al.").

Applicants respectfully traverse this rejection.

Chang et al. discloses an apparatus and method in a video conference system providing accurate determination of the position of a speaking participant by measuring the difference in arrival times of a sound originating from the speaking participant, using as few as four microphones in a 3-dimensional configuration. In one embodiment, a set of simultaneous

equations relating the position of the sound source and each microphone and relating to the distance of each microphone to each other are solved off-line and programmed into a host computer. In one embodiment, the set of simultaneous equations provide multiple solutions and the median of such solutions is picked as the final position. In another embodiment, an average of the multiple solutions are provided as the final position.

Chang et al., like the other cited references, fails to teach, mention or suggest the arrangement of the microphones as recited in claims 1 and 5, from which claims 2-4 and 6-8 respectively depend.

Thus, the 35 USC §103(a) rejection should be withdrawn.

In view of the aforementioned amendments and accompanying remarks, claims 1-10, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

U.S. Patent Application Serial No. 10/721,067  
Response to Office Action dated December 14, 2004

In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, KRATZ, QUINTOS,  
HANSON & BROOKS, LLP

*William L. Brooks*

William L. Brooks

Attorney for Applicant

Reg. No. 34,129

WLB/mla  
Atty. Docket No. 000538A  
Suite 1000  
1725 K Street, N.W.  
Washington, D.C. 20006  
(202) 659-2930



23850

PATENT TRADEMARK OFFICE

H:\HOME\letitia\WLB\00\000538a\amendment mar 2005